

Serial No. : 10/708,770
Applicants : Harold W. Steele and Phillip A. Tanis
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Amendments to the Specification:

Please replace paragraphs [0007], [0008], [0021], [0022], [0023] and [0026] with the following amended paragraphs:

[0007] An ejector assembly for use with a mold for molding plastic parts, according to another aspect of the invention, includes a first stationary member, a second stationary member and an ejector plate moveable between the first and second stationary members. A core blade lifter is provided that includes a lifter foot assembly that is moveable with the ejector plate and a lifter rod. The lifter foot assembly includes a rod carrier pivotally mounting the lifter rod to the lifter foot assembly. A stationary helper pin is provided that is generally parallel to the lifter rod. The core blade lifter includes a helper carrier that is pivotally mounted to the lifter foot assembly and is moveable along the helper pin. The lifter foot assembly includes a pair of ~~gibb~~gib plates with camming surfaces defined along the ~~gibb~~gib plates. The helper carrier and the rod carrier are commonly slidable along the camming surfaces.

[0008] A universal lifter foot assembly for use with an ejector assembly of a mold for molding plastic parts, according to another aspect of the invention, includes a pair of ~~gibb~~gib plates with camming surfaces defined along the ~~gibb~~gib plates. A carrier assembly is slidable with respect to the camming surfaces. The carrier assembly includes a rod carrier, a helper carrier and wear plates. The rod carrier and the helper carrier are pivotally mounted by the wear plates. The wear plates engage the camming surfaces. The rod carrier is adapted to actuate a lifter rod. The helper carrier is adapted to slide along a stationary helper pin generally parallel to the lifter rod.

[0021] Lifter foot assembly 22 includes symmetrical mirror image ~~gibb~~gib plates 28a, 28b and a carrier assembly 30 which is slidable along camming surfaces 32a, 32b defined in respective ~~gibb~~gib plates 28a, 28b (Figs. 1-4). Carrier assembly 30 includes a rod carrier 34 that is adapted to engage and actuate lifter rod 20. Carrier assembly 30 additionally includes

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a helper carrier 36 which captures and slides along upper pin 26. Both rod carrier 34 and helper carrier 36 are pivotal with respect to gibb plates 28a, 28b. This may be accomplished by a pair of wear plates 38 which pivotally support the rod carrier and the helper carrier and which slidably engage camming surfaces 32. Wear plates 38 include openings which rotatably support hubs 39 extending from rod carrier 34 and helper carrier 36.

In the illustrative embodiment, gibb plates 28a, 28b, rod carrier 34 and helper carrier 36 are made from steel and wear plates 38 are made from a self-lubricating material, such as bronze. However, other combinations of materials may be utilized as would be apparent to those skilled in the art.

[0022] Helper carrier 36 includes a through opening 40, which is sized to slide along helper pin 26. Rod carrier 34 includes a through opening 42, which receives an end of lifter rod 20. An opposite end of through opening 42 is enlarged at 44 to receive an enlarged gripping portion 45 of an adjustment screw 46. Adjustment screw 46 includes a through opening 48 to receive a fastener 50, which passes through the adjustment screw and into a threaded end of lifter rod 20. An external surface 52 of adjustment screw 46 is threaded to mate with an internally threaded surface of through opening 42. This allows adjustment screw 46 to be threadably adjustable with respect to rod carrier 34. This allows the rod carrier relationship to the lifter foot assembly to be adjusted by manipulation of gripping portion 45, such as with a wrench. A setscrew 54 positioned in an opening 56 in rod carrier 34 captures the adjustment screw 46 to prevent it from being removed from the rod carrier. A pair of end plates 58 retains the appropriate spacing of the gibb plates and captures the carrier assembly in camming surfaces 32 to prevent separation therefrom. Mounting openings 60, which extend the full height of the respective gibb plates, provide for mounting of the lifter foot assembly to the ejector plate.

[0023] In operation, helper pin 26 is fixed to ejector block 12 and clamp plate 14 at the same angle as lifter rod 20. Because rod carrier 34 and helper carrier 36 are pivotally mounted with respect to the gibb plates, lifter foot assembly 22 may be utilized with various angular orientations of the lifter rod and helper pin. In the illustrative embodiment,

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the lifter rod and helper pin may be positioned at an angle of 0 to 15 degrees with respect to the direction of movement of the ejector plate and may even be utilized at an angle of up to approximately 20 degrees with respect to the direction of movement of the ejector plate. As the ejector plate actuates lifter rod 20 upwardly, helper carrier 36 slides along helper pin 26. Also, as the ejector plate 16 moves, the carrier assembly 30 moves laterally. This is assisted by the helper pin which assists in causing the slidable motion of the carrier assembly thereby reducing the lateral force placed upon the lifter rod.

[0026] Thus, it is seen that the present invention provides a universal lifter foot assembly that is exceptionally versatile and allows the mold designer to utilize common components without the necessity for detailed design of the elements thereof. Moreover, a carrier assembly and ~~gib~~ plates may be kept in stock with the angle of the camming surfaces either machined at the time of use or stocked at various angles of inclination. Other modifications will become apparent to those skilled in the art.